

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)


Rec'd PCT/PTO 04 MAR 2005

Applicant's or agent's file reference P16332-ATO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/10025	International filing date (day/month/year) 07.09.2002	Priority date (day/month/year) 07.09.2002
International Patent Classification (IPC) or both national classification and IPC H04L12/56		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26.03.2004	Date of completion of this report 05.11.2004
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International application No. **PCT/EP 02/10025**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-3, 5-24 as originally filed
4, 4a received on 18.10.2004 with letter of 18.10.2004

Claims, Numbers

1-14 received on 18.10.2004 with letter of 18.10.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
- (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	none
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	none
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	none

2. Citations and explanations

see separate sheet

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Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: EP-A-0 951 198
D2: DE 100 08 148 A
D3: EP-A-1 178 624
D4: US-A-5 905 871

2 The present application is related to a method (claim 1), a transmitter (claim 13) and a program (claim 14) for dealing with transmission errors of data blocks in a mobile radio communication system using multicast transmission to several receivers. More particularly the invention consists in avoiding protocol malfunctions by sending a synchronization message and subsequently moving the transmission window of the transmitter in case a predetermined fraction of the receivers of a multicast group acknowledges said synchronization message.

3 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document) an IP multicast transmission method over a wireless ATM network. To avoid protocol deadlocks the transmitter discards retransmission requests and the receivers stop to request retransmissions upon the expiry of different timers.

3.1 The subject-matter of claim 1 differs from this known multicasting method in that a synchronization message and the acknowledgement of a predetermined fraction of the receivers of a multicast group is used instead of timers for stopping retransmissions and avoiding deadlocks.

3.2 The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

4 The problem to be solved by the present invention may be regarded as improving the transmitter's and receivers' transmission windows control method because timers only allow a rough synchronization and therefore do not eliminate all

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possibilities of protocol malfunctions.

4.1 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

4.1.1 The method of D1 is approximate and still allows uncertainties and malfunctions which are avoided when using the method of the present application.

4.1.2 The unicast method disclosed in D2 involves a RLC discard message which also contains the number of erroneous packets so that superfluous retransmissions are stopped. But because errors may also occur in this discard message this method could even worsen the problem if used for multicast.

4.1.3 The document D3 discloses a retransmission control method for a multicast distribution service in which retransmissions are requested at a timing determined by the terminals.

4.1.4 In the document D4 a multicasting method for transmitting data segments over an established multicast tree is disclosed. The transmitter retransmit lost packets either by unicast or by multicast depending on the number of missing acknowledgements; its window is moved first when all acknowledgements have been received.

4.1.5 None of the cited documents gives any hint for using a synchronization message and for dropping retransmission and moving the transmitter window as soon as a predetermined fraction of the receivers of a multicast group acknowledges said synchronization message. The method disclosed in claim 1 prevents that the protocols in other receivers are negatively affected by those receivers with bad reception conditions. Therefore, this new method allows to avoid protocol malfunctions in wireless multicast networks in a more reliable and more efficient manner than known from the prior art.

5 Independent claims 13 and 14 although phrased as an apparatus claim and a program claim respectively, are nonetheless a simple repetition of the subject-

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matter of method claim 1 and hence, are new and involve an inventive step in the sense of Article 33(2), (3) PCT for the same reasons.

- 6 Claims 2 to 12 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Certain defects in the international application

- 1 The independent claims 1, 13, and 14 are not in the 2-part characterizing form, where the preamble should reflect the nearest prior art (see PCT preliminary examination guidelines, chapter 5.05).